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A New Species of Centipede from a Tree Hole in California

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In the course of work on the tree-hole habitat (Park, Auerbach, and Corley, 1950; Park and Auerbach, 1951)) a series of twelve small lithobiomorphous centipedes were obtained from a sugar pine tree hole in Tehama County, California by the Berlese funnel method. These specimens proved to be a new species of the genus *Simobius,* the description of which follows.

Simobius gardneri new species

Color. [t] Dorsal surface of body ochraceous salmon. Cephalic plate darker tending toward zinc orange. Antennae same color as cephalic plate. Ventral surface of body pale ochraceous salmon anteriorly, darkening to ochraceous salmon posteriorly.

Antennae consisting of 20 articles. Short, extending from the front margin of the head to the caudal margin of the third tergite. Second article longest; articles decreasing in size distally with exception of last which is 1.3 times longer than the preceding two. Last article subelliptical. Articles beset with long setae increasing in density distally.

Cephalic Plate. Ratio of head length to width 1:1. Frontal suture distinct; each lateral margin with a distinct break anteriad of the posterior angle of the head. Two rows of four long setae each, located along the cephalic margin of the clypeus. A series of long setae sparsely arranged marginally on the plate. A few setae scattered on dorsal surface of the plate.

Ocelli consist of 5 or 6 in two series, 1 + 2, 3, 1 + 2, 2.

Prosternal teeth 2 + 2; line of apices recurved and ectal setae present. Diastema distinctly U-shaped, with a fine, pale suture extending to the caudal margin of prosternum.

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t Based on Ridgway, Robert, 1912, Color standards and color nomenclature. Washington, D. C., iii, 43 p., 53 pl.

First tergite 1.6 times wider than long. All tergites except 2 and 4 distinctly marginate. All tergites finely areolate and sparsely beset with setae becoming denser caudally. Stronger setae along the margins. None of the posterior angles produced.

Sternites smooth, shiny and areolate with few setae.

Body length 8.3 times greater than the width of the 10th dorsal plate.

Coxal pores circular 2, 3, 3, 2 – 2, 3, 3, 2.

Spinulation of first legs $\frac{00111}{00111}$; of second and third $\frac{00121}{00021}$; of fourth through eight $\frac{00122}{00022}$; of the ninth $\frac{00122}{0003(2)2}$; of the tenth $\frac{00122}{00122(3)}$; of the eleventh $\frac{00121(2)}{00232}$; of the twelfth $\frac{10211}{00232}$; of the thirteenth $\frac{10211}{01231(2)}$; penult $\frac{10310}{01330}$; anal $\frac{10310}{01330}$. Last two pairs of coxae laterally armed. Anal legs terminate in a single claw; penult legs terminate in one large claw and one minute accessory claw; remaining legs terminate in a large claw, flanked posteriorly by a minute accessory claw and anteriorly by a minute accessory spine. Tarsi one-segmented. Anal legs with no special modifications and no evidence of incrassation. Penult legs possess a truncated tubercle the free surface of which bears five bristles (cf. Chamberlin, 1922, plate 12, fig. 4). This process is located dorsally on the mesocaudal portion of the distal end of the fifth article.

Male gonopods not exposed in type specimen, but visible in a mounted paratype. Gonopods small, rounded, with lateral margin shorter than the mesial, and bisetose.

Holotype Male, length 7.0 mm. Berlesed from a sugar pine tree hole; Mill Creek, Tehama County, California. Material collected June 24, 1950 by the late George Gardner, Jr. and in whose honor this species is named. Holotype, allotype, and 9 paratypes in the collection of the author; one paratype presented to Dr. R. V. Chamberlin; and one paratype to Ralph Crabill, Jr.

Allotype Female, mounted in Hoyer's medium, as for holotype with the following exceptions.

Body length 7.9 times greater than the width of the 10th dorsal plate.

Spinulation of the first legs $\frac{00011}{00001}$; of the second $\frac{00011}{0000(1)1}$; of the third $\frac{00011}{00011}$; of the fourth and fifth $\frac{00021}{00011}$; of the sixth and seventh $\frac{00022}{00011}$; of the eighth $\frac{000(1)22}{00021}$; of the ninth through eleventh $\frac{00122}{00121}$; of the twelfth $\frac{00211}{00232}$; of the thirteenth $\frac{10210(1)}{01332}$; of the penult and anal $\frac{10310}{01330}$. Penult leg lacking a tubercle.

Claw of female gonopod tripartite; teeth sharp, the median tooth much longer than the outer two. Basal spines 2 + 2, the outer broadly acuminate and almost twice as long as the inner. The inner spine tapering abruptly to a sharp point whereas the outer spine is just discernibly crenulate along the outer margin. Gonopods sparsely beset with setae.

Table I. *Simobius gardneri* new species. A comparison of some of the chief diagnostic features and an analysis of some of the morphological relationships of the series collected. BL–Body length; 10T–Tenth dorsal plate; HL–Head length; HW–Head width; 1TW–First dorsal plate width; 1TL–First dorsal plate length. Specimen No. 3–Holotype; No. 10–Allotype.

Specimen	Sex	BL (mm.)	BL:10T	HL:HW	1TW:1TL	Coxal Pores	Spinulation 12th legs	13th legs	Penult	Anal
1.	♂	6.0	8.8:1	1.04:1	1.5:1	2321 2331	10211 01332	10211 01332	103(2)11* 01330	10310 01330
2.	♂	6.0	9.5:1	1.1:1	1.6:1	2321 2322	10211 00(1)231	10211 01332	10311 01330	10310 01330
3.	♂	7.0	8.3:1	1:1	1.6:1	2332 2332	10211 00232	10211 01231(2)	10310 01330	10310 01330
4.	♂	4.7	9.5:1	1.05:1	1.5:1	2221 2221	00121 00221	10221 01221	10211 01330	10310 01220
5.	♂	8.0	7.7:1	1:1.02	1.7:1	2332 2332	10211 00232	10211 01331	1021 - 0133 -	10310 01330
6.	♀	6.0	9.1:1	1.09:1	1.9:1	2332 2332	0(1)021(2)1 00132	10211 01332	10311 01330	10310 01330
7.	♂	4.6	8.5:1	1:1.01	1.5:1	2221 2221	0(1)0211 00231	0(1)0211 01331	10211 01330	10310 01330
8.	♂	5.5	7.9:1	1.09:1	1.5:1	2332 2332	10211 00232	10211 00232(1)	10311 01330	10310 01330
9.	♂	7.0	8.8:1	1:1.01	1.5:1	2332 2332	10211 00232	00211 01331(2)	10211 01330	10310 01330
10.	♀	5.0	7.9:1	1:1	1.6:1	2332 2332	00211 00232	10210(1) 01332	10310 01330	10310 01330
11.	♂	3.7	8.7:1	1.1:1	1:5:1	1111 1111	00010 00111	00010 00111	00000 00110	00000 00110
12.	♀	3.7	9.1:1	1.1:1	1.6:1	1111 1111	00010 00111	00010 00111	00000 00110	00000 00110
Averages		5.6	8.65:1	1.05:1	1.58:1					
Extremes		3.7-8.0	7.7:1-9.5:1	1:1.02-1.1:1	1.5:1-1.9:1					

*Items in parentheses represent the spinulation of the opposite segment.

Length of allotype 5.0 mm.

The twelve specimens afforded an opportunity for some statistical treatment, particularly with regard to certain morphological parameters used by other workers in their descriptions of new species of centipedes. These are the ratios of body length : tenth dorsal plate, head length : head width, and first dorsal plate width : first dorsal plate length. In addition several immature specimens showed differences in spinulation, as well as variation in numbers of coxal pores, and further demonstrated a need for tabular treatment of the material. These data are all summarized in Table I.

It will be noted in Table I that the smaller individuals have fewer spines on the last four pairs of legs. But with succeeding molts the armature is increased. Though the spinulation generally is quite stabilized on the last four pairs of legs, in this material it is definitely manifested only on the anal legs. In many cases where there is a spine lacking, it may have been broken off during life and not replaced. Such replacement occurs only after a complete molt. The smallest specimens have a greatly reduced armature, as well as a reduced number of coxal pores. These two specimens (No. 11 and 12) belong to the *Agenitalis* I stage (cf. Chamberlin, 1916, p. 119).

The analysis of the morphological ratios is of interest. It can be seen easily that there is a large variation in the body length : tenth dorsal plate ratio (7.7:1 – 9.5:1, ay. 8.65:1). This raises doubts as to the significance of this widely used variable when applied to single individuals of certain species. On the other hand, the application of this parameter to the genus as a whole may provide a clue as to its systematic validity. The other parameters listed do not show quite as much variability, particularly the head length : head width ratio (1:1.02 – 1.1:1, ay. 1.05:1). Here again resolution of the questions involved may be attained more readily by a generic analysis.

Simobius gardneri at present represents the southernmost dispersal of the genus. The other two species have been taken in Washington and Alaska. On the basis of present information the genus is distributed in western North America.

Simobius gardneri differs from *S. ginampus* in that the former has the tarsi of the anterior legs undivided; the penult legs are armed with only two claws instead of three; and the ventral spines of the penult and anal legs are 01330 instead of 01332 and 01331, respectively. Both *gardneri* and *ginampus* have the last two pairs of coxae armed laterally, whereas *S. lobophor* (Chamberlin, 1941) lacks lateral armature on these coxae.

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